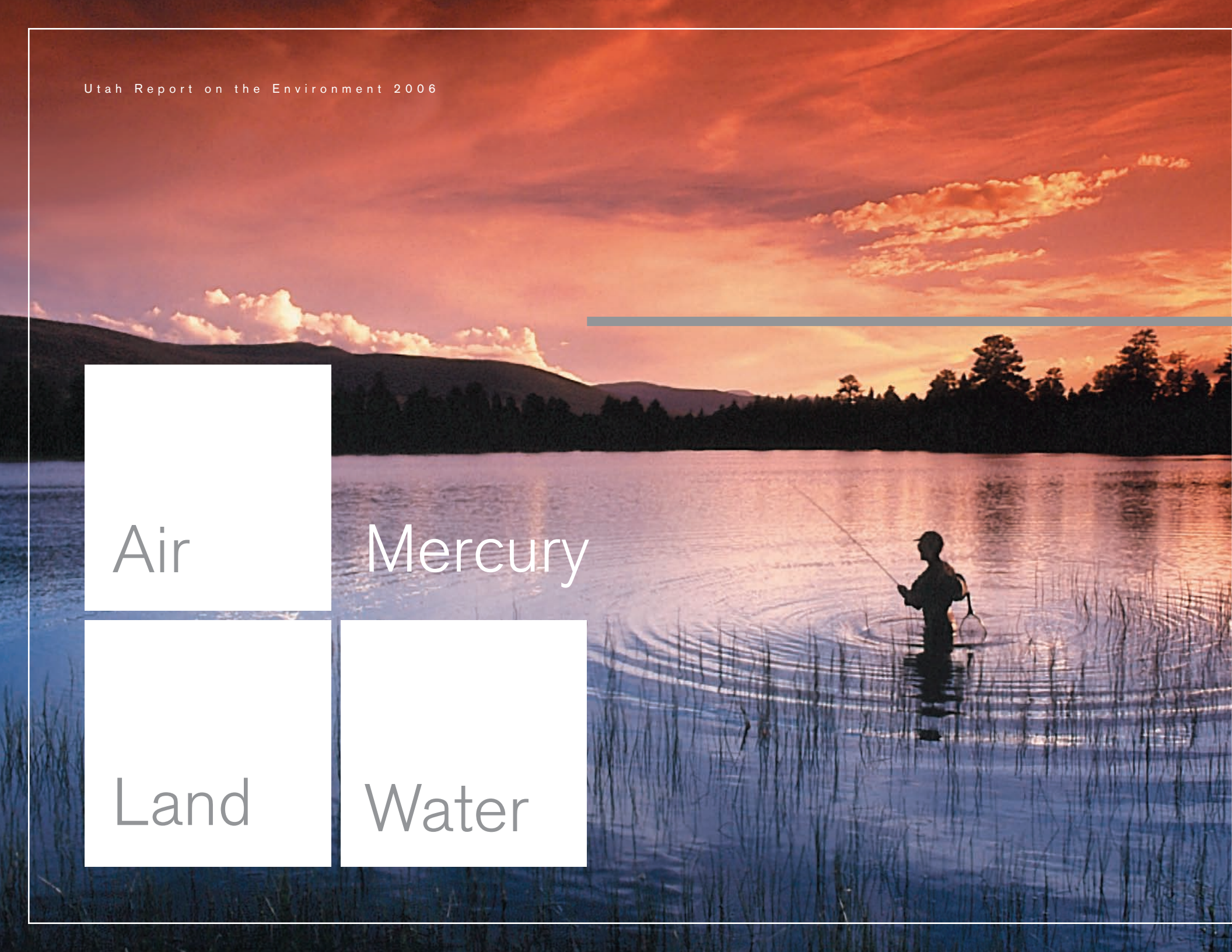


Air

Mercury

Land

Water

Contamination Mercury

Introduction

Mercury is a naturally occurring element that can be transformed into very toxic compounds. Mercury has two primary forms – naturally occurring elemental mercury, which is less toxic, and the more toxic organic form methylmercury, which can affect the human central nervous system.

Mercury is spread by emissions into the atmosphere, subsequently settling onto the ground, and deposition in the bottoms of lakes and oceans. It can come from a variety of sources, including natural sources, such as volcanic and geothermal activity, marine environments or forest fires. Mercury can be released from coal-fired power plants and other industrial activities. It can be released during scrap metal recycling, if mercury switches are not removed before the metal is recycled. Mining processes can also release mercury, when mercury is present in soils or waste rock and volatizes into the atmosphere. In addition, the erosion of mercury bearing rocks is released in the water and air during precious metals extraction. Thermal processing of gold ore can release mercury, as can burning coal in power plants. Incineration of municipal and medical wastes can be a source of mercury emissions. Even household waste can be a source of mercury contamination, if old thermometers, light fixtures, and other items are disposed of improperly.

In 2004, Utah companies reported releasing 120,847 pounds of mercury into the air, land and water, according to EPA's Toxic Release Inventory. DEQ has assembled representatives from each of DEQ divisions to address mercury issues in a coordinated manner. The team has developed a draft strategic plan to make sure mercury is addressed in a coordinated fashion.

Many states across the nation are grappling with the impact of mercury, a naturally occurring metal that in its more toxic form can lead to health problems. Utah scientists studying the issue are still investigating mercury deposition in the state, but realize it could be coming from emissions generated as far away as Asia and as close to home as Utah and neighboring Nevada. Like many other contaminants, mercury is an example of how contamination can affect all aspects of the environment: air, land and water.

Photo: Tom Till, UOT

Success Story in the Air

DEQ worked with the 2006 Legislature to pass House Bill 138, sponsored by Rep. Ronda Menlove, that requires automakers to pay a $5 incentive to scrap dealers to remove the small mercury switches in automobiles before the vehicles are crunched and incinerated for scrap metal recycling. Millions of cars made before 2003 contain the switches that were used for anti-lock brakes and convenience lights under hoods and in trunks. According to a March 19, 2006 Salt Lake Tribune article by Judy Fahys "estimates suggest there are 35 million of them (switches) still in vehicles on the road. Nucor Steel in Utah recycles more than 250,000 vehicles each year that might contain the switches. Nucor reports releasing about 139 pounds of toxic mercury into the air each year."

Mercury in the Air

Mercury is regulated as a Hazardous Air Pollutant in Utah, and strict requirements are in place to control emissions from coal-fired power plants and other industrial sources. The Department of Environmental Quality (DEQ) is currently working with EPA on further mercury emissions reductions from coal-fired power plants. DEQ has already taken steps to reduce emissions, including mercury, from municipal and medical waste incinerators. These actions will ensure that Utah continues our success in lowering mercury emissions from sources within the state.

Nevada, Utah's neighbor to the west, produced 81 percent of the gold mined in the United States in 2003 and continues to lead the nation in gold production. Mercury is a common by-product of gold mining and processing, and Nevada mining activities therefore represent a very large potential source of mercury emissions that could affect Utah. DEQ supports the efforts of the state of Nevada to reduce mercury emissions at gold mines.

Mercury on the Land

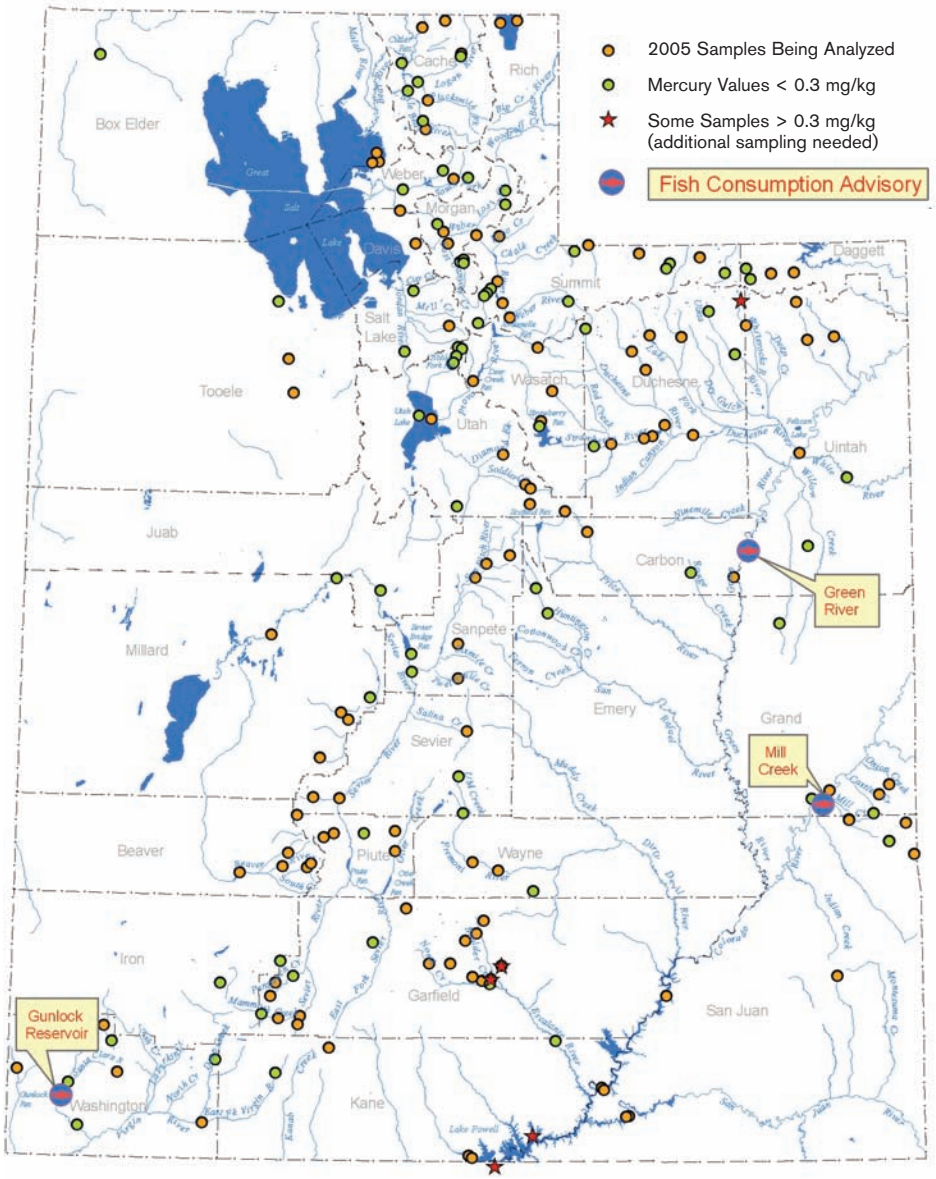
Mercury occurs naturally, in some rocks and watersheds in Utah. DEQ is working to identify these areas. Mercury also is found in many household products, including mercury thermometers, fluorescent light bulbs, thermostats, blood pressure gauges and old chemistry sets and toys. To reduce the amount of mercury in the landfills, the local health departments around the state have partnered with DEQ to set up mercury collection sites where citizens dispose of their old mercury products free of charge.

Mercury in the Water

When mercury is deposited in waterways, bacteria converts it to methylmercury, which can build up in the tissue of fish and other wildlife, which may be eaten by wildlife and people. Exposure to mercury occurs most frequently through eating contaminated fish.

In February 2005, U.S. Geological Survey and Fish and Wildlife researchers gathering information on selenium in the Great Salt Lake also reported finding high mercury levels. To protect human health, Utah issued its first fish consumption advisories due to elevated levels of mercury in fish tissue at Gunlock Reservoir, Mill Creek and Green River in Desolation Canyon. Also, Utah has issued duck consumption advisories due to elevated mercury levels – the first ever reported in the nation. In 2006, an additional duck species was added to the advisory list. Testing is ongoing.

2006 Mercury in Fish Tissue



Success Story on Land

The **"Get the Mercury Out"** campaign, a partnership between **DEQ** and local Health Departments, allowed residents **free disposal** of mercury products at various drop-off locations throughout the state. In April alone, 145 pounds of mercury was collected, and the program was extended. As of October 2006, a total of 375 pounds of mercury has been collected. Because mercury is still a valuable commodity, the mercury collected can be recycled or disposed at a hazardous landfill. Either method ensures that mercury is not disposed of in the landfills and does not pose a potential health hazard.

Success Story in Water

In November 2005, **DEQ** purchased a $50,000 **mercury analyzer** for the Utah Department of Health State Laboratory to analyze the fish tissue samples more rapidly and report the results to the public in a timely manner. Previous to the purchase, DEQ had to take the fish tissue samples to an out-of-state lab for testing. The backlog caused delays and the mercury analyzer has allowed more timely results.

Utah Statewide Mercury Work Group

In 2005, DEQ established the Mercury Work Group (MWG) to coordinate mercury studies and investigations in Utah. Stakeholders from a broad base of state, federal, non-profit agencies, industry, and the public participate. There are presently nineteen members, representing fishing and waterfowl groups; mining and power generating industries; environmental advocacy groups; state, federal and local agencies; the Utah Medical Association; and academic and tribal interests.

The objectives of the group are:

- To provide the citizens of Utah with current, accurate and understandable information on the human and ecological concerns posed by mercury.
- To develop an ongoing systematic, logical, and defensible mercury monitoring program to assess mercury levels in fish and waterfowl tissue.
- To share technical information, data, and results of any investigations on mercury.
- To coordinate efforts by private and public entities in researching mercury issues in Utah in order to most effectively utilize the limited resources available.
- To provide the citizens of Utah with access to mercury data, advisories, and information via websites, printed materials, and contact information for public health officials.

MWG meetings are open to all interested parties. Visit www.deq.utah.gov/Issues/Mercury/workgroup.htm for information about upcoming meetings, past meeting agendas, current work group member list, and other information about mercury.

Other Activities

DEQ is in the process of developing a DEQ Strategic Plan to coordinate mercury related activities between the different divisions within DEQ. The Department is also currently developing a Source Assessment Protocol for mercury, which is a standardized approach to assessing contaminated areas, allowing us to look at and identify all the possible ways that mercury could enter and contaminate an area. Within DEQ, the Division of Environmental Response and Remediation (DERR) provides technical support to local and county public health agencies responding to mercury spills. There were twelve such incidents in the Fiscal Year 2006. Resources provided include monitoring instruments, support from DERR staff toxicologist, and cleanup protocols.

Activities outside of DEQ include the Hospitals for Healthy Environment (H2E) Grant, School Chemical Clean Out Pilot, and the previously mentioned “Get The Mercury Out” Campaign, through local health departments.

Notes: